Not insignificant

also is the catch of seals (Phoca sivirica), which are preserved in large 225
numbers in Lake Baykal.

Of much greater importance, however, is the fishing in the 226
rest of the Far Eastern region. For the economy of the natives it not uncommonly constitutes the sole or at least the principal source of food. But the Russian settler, too, would not like to miss fish on his menu. Thus everywhere in the Far Eastern region where even a brook extends through the land we find the occupants occupying themselves with supplementing their food needs by fishing. In this the historical development also plays a certain role, for the first Russian settlers found one of the principal sources of food in catching fish. And nature has blessed the entire area with lakes and rives rich in fish. In addition there is the fact that off the entire coast of the Far Eastern region there stretch seas which are likewise exceedingly rich in fish and which belong to the most important fishing grounds on the earth. Year after year innumerable types of salmon in vast numbers come from the sea for the spawning period and go up the rivers and often far into the land, where men wait for them in order to provide nourishment for themselves and for their animals, not only temporarily but also often for the entire year. For the bulk of the coast of the north fishing constitutes /134/ absolutely the sole basis of existence for man. If the coastal strip far into the north is inhabited, this is above all due to the sea and its abundance of fish and sea animals.

The wealth of fish and sea animals of all kinds in the peripheral 228
seas has, through fishing for self-supply by the population on the coast and inland, led to the development of industrially run coastal and high sea fishing, which has become the leading branch of the economy in the Far Eastern region. Through the creation of a state fishing fleet and the equipment of this fleet with modern motorboats, trawlers, and special ships for catching crabs/shrimp and whales, the Far Eastern region by 1938 had won first place within the Soviet Union in terms of its catch. More than a fourth of the total catch of fish and of the canned fish goods in the Soviet Union comes from the Far East.

Catch of Fish in the Far Eastern Region

1913	107,330 tons
1928	161,820 tons
1932	346,800 tons
1937	404,800 tons

●228 The total catch from sea fishing in the USSR in 1938 was 1,490,000 tons, of which the Far East contributed 25.2 percent, followed by the Volga-Caspian area with 23 percent. A total catch of 2.2 million tons was planned for 1950. On the whole it was filled only by 96 percent, while the Far East overfilled its quota by 50 percent. Accordingly the Far East's percentage of the total catch of the Soviet Union has grown still more. More exact figures on the individual regions have not been published. A total catch of 3,476,000 tons is planned for 1955 for the Soviet Russian sea fishing industry.

In evaluating the catch of the various areas, however, it must be taken into consideration that in the Far East especially valuable types of salmon constitute the bulk of the catch. Furthermore it should be brought up that because of its small population and therefore its own low requirements, the Far East belongs to the most important surplus area. As a consequence of this development an active fish industry has come into being here. All the larger places on the coast have cold-storage houses. However, there has been a special rise in [255] fish canning factories, whose number has risen from 2 in 1913 to 42 in 1938. At the same time in connection with these, factory installations have been created which produce on the spot the necessary requirement of cans. In addition there are special ships which process the catch right on board. In this connection the ships for catching crabs/shrimp should be mentioned; these ships can be described as floating canning factories. Their work area is the /135/ west coast of Kamchakta. In catch of crabs/shrimp the Far Eastern region has first place in the world.

The coastal area on the Sea of Japan from the Korean border to the Tatar Strait constitutes the most southerly fishing district. Here herring and sardine fishing stand in the foreground. Fishing is done above all in the bays, with the richest catches coming from the Bay of Peter the Great. The center of this and the processing point is Vladivostok, which has a modernly equipped canning industry. In the years before 1938 the catch of herring went in part to the interior and in part to Japan.

The area around the lower course of the Amur constitutes the second fishing district. This great river serves as preferred spawning ground especially for two of the Pacific types of salmon: the beloved Keta salmon (Oncorhynchus Keta Walb), which provides red caviar and is called dog salmon by the Americans; and the somewhat smaller gorbusha (humpback salmon, Oncorhunchus gorbusha Walb). There

are some curiosities in the appearance of these types of salmon, especially the gorbusha. Peter Schmidt has devoted a detailed investigation to them (Osteuropa /East Europe/ 1928, II), and points out that these types of salmon have not multiplied as much as the European types, since they spawn only once during a lifetime and in addition lay only approximately a tenth the number of eggs that, for example, the Rhine salmon lays. Especially interesting, however, is the fact that the appearance of the swarms of gorbusha has a remarkable two-year periodicity. L. S. Berg (27) gives the following figures on the catch of

27. Berg, L. S., Landshaftno-geograficheskie Zony SSSR /The Landscape Geographical Zones of the USSR/, Part I (Moscow, 1931), p. 390.

gorbusha in millions of fish: According to L. S. Berg this two-year

1914	14.5	1921	0.2
1915	1.0	1922	9.0
1916	9.2	1923	0.0
1917	0.5	1924	12.2
1918	14.9	1925	0.0
1919	0.4	1926	14.1
1920	12.0	1927	0.0
		1928	16.4

periodicity in the Amur district developed only since 1908, while no such periodicity has been determined on the coasts of Kamchatka; on the contrary, the Keta salmon appears regularly every year in both regions. As a result of the two-year periodicity of the appearance of the gorbusha there is also a corresponding fluctuation in the total catch of the Far Eastern region. The excess of fishing in the area of the lower course of the Amur is counteracted by artificial breeding of salmon spawn. The center of this fishing district is Nikolayevsk on the /136/ lower Amur, where 75 percent of the total population serves the catching and processing of fish.

The third fishing district is the eastern side of Sakhalin Island, where in addition to the various types of salmon, herring, cod, tuna fish, and mackerel above all are caught. In contrast to the other fishing districts, however, Sakhalin Island falls behind in importance.

The main fishing district of the Far East, which has been de-

228 veloped most heavily in recent years, is the Kamchatka Peninsula. The highly valued Pacific salmon types stand in first place in the catches here: red, silver, and king salmon (Oncorhynchus nerka, Oncorhynchus kisutch, Oncorhynchus tschawytscha Walb). All the rivers on the peninsula and on the neighboring mainland are visited annually by great swarms of salmon, and accordingly the processing is divided among numerous coastal localities, which are discussed in detail in the discussion of the Kamchatka Peninsula. The Sea of Okhotsk off the western coast of Kamchatka appears to be especially favorable to the development of crab/shrimp/Krabben/which regularly appear in the spring come to the shores from the depths of the sea, where they spend the winter. Therefore, the crab/shrimp-catching fleet is also stationed here. The seas around Kamchatka, especially the Bering Sea, are, in addition, rich in sea suckers /Seesäuger/ such as walruses, seals, and whales, although the latter are in the process of dying out. Petropavlovsk, which is the administrative center of the peninsula, constitutes the center of the hunting of sea animals. How very much the rise in the catching of ocean fish and sea animals has influenced the development of Kamchatka is shown best by the increase in population, which in 1914 was estimated to be less than 20,000, which grew to 30,000 in 1926, and which by 1948 had already exceeded 120,000. The surplus of fish caught here is used for the other parts of the Soviet Union, or is available for export, with western Europe as the principal consumer.

A peculiar and typically East Asiatic fishing industry has developed on the southern coast of the Ussuri country. The principal objects of this industry are sea cucumber /Seegurke/ "trepang" (Holothuria edulis) and the sea cabbage/Seekohl/, a kind of seaweed (Laminaria saccharina). The edible trepang is fetched from a depth of 4 to 10 meters with special anchors or by divers. The sea cabbage is torn from the floor of the sea with hooks and comes dried out to the market. Both sea products go to China where they are an especially beloved food.

The entire Soviet Russian catch of ocean fish in the Far East is included in the organization of "Dalrybtrest" (Far East Fishing Trust), which has its seat in Vladivostok. The fishing concessions in the vicinity of the Russian coasts, assured at one time to the Japanese through treaties, have become untenable through the outcome of the last war. It should not be assumed that these treaties will be renewed, and accordingly extensive possibilities of development stand open to the Soviet Russian

catching of ocean fish in the Far East.

133

(Captions to Map on page 235)

1. Baykal Daur
2. Nerchinsk Daur
3. Vitim Plateau and the northern mountain forest provinces
4. Olekma mountain country and the Olekminsk Stanovik
5. Oldoy-Zeya mountain country
6. Zeya-Bureya plain
7. Bureya mountain country
8. Amur plain
9. Sikhote-Alin'
10. Ussuri-Khanka depression
11. Sakhalin Island
12. Area of the Amgun and the Uda
13. Okhotsk coastal area
14. Provinces of the extreme northeast
15. Kamchatka Peninsula

responsible for 32 percent. On the Transbaykal side, in the area of 2280
the Buryat-Mongol ASSR, approximately 30,000 double centner of fish are caught annually; in good years even more than 35,000 double centners of fish are caught. Thus a series of fishing settlements animate the Transbaykal shore. The most important are Nizhne-Angarsk, 361
which lies on the extreme north east tip, Ust'-Barguzin at the mouth [255]
of the river of the same name, where there is also a fish canning factory, and, south of this, Goryachinsk, which in addition to fishing [312]
is acquiring a growing importance as a health resort because of its hot springs.

Baykal Daur

Baykal Daur begins in the west with the Khamar-Daban. This 133
mighty mountain massif, projecting up to 2,217 meters, follows the southern shore of Lake Baykal. Along this shore, runs the railroad which encircles Lake Baykal and which is forced to follow all its windings. This mountain massif is little divided and has predominantly soft forms with dome-like heights which are seldom rocky. These heights, as Prassolov describes them (160), give the impression of being

160. Prassolov, L.I. Iuzhnoe Zabaykaliye /Southern

over long years, Lake Baykal remains for 116 days under a solid ice covering, which can attain a thickness of up to 1.25 meters.

The fauna of the lake is peculiar, representing a true collection of endemic forms. Of the 1,000 types determined so far, around 75 percent are endemic. Here in the middle of the continent there is a type of seal called "nerpa" by the Russians (Phoca sibirica), which is related both to the same type found in the Arctic Ocean (Phoca hispida) and also to one found in the Caspian (Phoca caspia). The next fauna worthy of mention is the small, viviparous spider fish (Callionymus baicalensis), whose family (Comephoridae) is peculiar only to Lake Baykal. Exceedingly large is the number of mollusks. To date 85 types have been determined, of which two endemic families of brachiopods (Benedictiidae and Baicaliidae) are typical fresh water representatives. The great age of the Baykal fauna, which must have followed an isolated development, indicates the /209/ /Sketch Map of the Provinces:// /210/ appearance of the Baicalia mollusks already in the fresh water deposits of the lower Cretaceous in Transbaykal.

As a result of its depth and its favorable natural landing places, Lake Baykal offers the best opportunities for water transportation. A steamer line which is traveled regularly, connects all the larger settlements with one another and also serves the transportation of goods. Wood constitutes the bulk (40 percent) of the goods transported, in second place are stones and building material (30 percent), then follow fish, salt, flour, and others. The wood as a rule is floated down the rivers to the lake and then is transported by steamer tugs to the mouth of the Angara, where it is transferred to the railroad in Baykal station, which is equipped with mechanized loading equipment, or a small part of it is floated directly to Irkutsk. Wood is delivered on the Transbaykal side primarily by the river areas of the Barguzin and the Upper Angara.

Also of economic significance is fishing, which is pursued both in the open sea and also in the bays. The principal role in this fishing is played by the catching of a type salmon, the omul (Coregonus omul Pall. or Coregonus migratorius), and of fish related to the omul: these fish constitute 58 percent to the catch. In second place are types of carp (22 percent), which are caught primarily in the lagoons and in neighboring lakes. Also the catch of seals, already mentioned, is not insignificant. In 1948 there were 1,380 animals caught. Fishing is pursued both by the state and also by fishing kolkhoz. The latter caught 68 percent of the total catch in 1949, while the state was

1 [i.e. Lake Baykal -- Analyst]

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Sketch Map of the Buryat-Mongol ASSR: Industry:

- Coal Mines
- Construction of wooden ships
- Transport machinery
- Wood industry
- Groceries
- Molybdenum
- Glass industry
- Fish industry
- Gold
- Dairy plants
- Various industries

/215/

- Border of the Buryat ASSR
- Border of the USSR

lengthening of the BAM via the Sikhote-Alin' to Sovyetskaya Gavan', which is the best natural harbor on the coast of the Gulf of Tatar. The railroad for a part of the way uses the middle course of the Khungari, a right tributary of the Amur, in whose basin a large Tertiary brown coal deposit was discovered in 1932. This deposit is supposed to be used to run the railroad. At present the railroad to Sovyetskaya Gavan' already plays an important role in the treating of lumber from the Sikhote-Alin', which is processed for export in a large lumber mill in the harbor city.

Nikolayevsk with its approximately 30,000 inhabitants is the economic center in the region around the mouth of the Amur. It owes its importance above all to the wealth of fish in the neighboring parts of the sea and in the Amur. Accordingly, it has been able to develop into one of the largest centers of the fish-processing industry. The city cannot develop very well as a sea harbor because of the harsh climatic conditions--the ice-free period lasts only around 160 days--and the unfavorability of the mouth. The mouth of the river is closed off by a sand bar of great width, which enables only those ships to pass which have a draught of up to 3.50 meters. In addition, there is the fact that the "Amur-Liman" itself is very flat, has many shallows, and thus permits sea-going ships to travel on it only in a few natural canals. Thus only smaller coastal vessels can get into the Amur, while larger sea-going ships must be unloaded on the open sea and their goods transferred to river vessels. For many years they have been in the process of creating a suitable waterway in the Amur, but the difficulties appear to be too great. Above all the natural deposit of bar sand again and again destroys the work of man.

The Sikhote-Alin'

The Sikhote-Alin' with its mountains fills the entire area from the mouth of the Amur on the north to the steep break at the Bay of Peter the Great. In contrast to this vast expanse, the narrow depression which extends at the western foot of the Sikhote-Alin' and which only in the south has extensive plains, appears to be of subordinate importance, particularly, too, because spurs of the Sikhote-Alin' not uncommonly penetrate almost to the Ussuri, and individual mountains of the Sikhote-Alin's border steps which traverse the entire land, appear even in the plain. Nevertheless, the smaller depression has the greater significance, for in it sits the bulk of the population, and in it

oblast is Palana, which lies on the river of the same name on the west coast. Almost half the Koryak are sedentary and live in wooden houses, built after the Russian model, in villages on the coast or on rivers, where they live from fishing and hunting. All breed the dog as a domestic animal. Already gardens, in which they grow potatoes and vegetables, are also very often to be found near their houses. The bulk of the Koryak, however, remain in /300/ reindeer breeding and are developing the same good qualities which the Chukchee possess in this respect. Apart from the Samoyed in the northern part of the European tundra, the Koryak and the Chukchee are the best reindeer breeders in the Soviet Union, and they also have more than a third of the total stock of reindeer in the USSR. The Kamchadal occupy the southern part of the west coast, the Kamchatka valley; and many of them are also to be found as workers in the fishing localities on the east coast. They are under the influence of the Russians in all things and have become completely sedentary. Fishing and hunting, however, have remained their principal occupations. But they have in many cases already given up the breeding of dogs and keep horses, which are more and more displacing the dog as the riding and draft animal in the southern part of Kamchatka. The cultivation of vegetables and potatoes has already become a rule with them. In the central, more remote part of Kamchatka, there still lives a smaller number of Tungus Lamut, who are only reindeer breeders. Hemmed in by the more progressive Koryak and Kamchadal, they constitute the poorest population on the peninsula. Their herds are only small ones, and during harsh winters they are to be encountered begging among the rich Reindeer Koryak.

The heavy immigration of Russians can be traced back to state guidance. In the years 1930 to 1933 alone 15,000 settlers came into the land. The capital Petropavlovsk had around 28,000 inhabitants in 1939, which was more than all Kamchatka had before 1914, and today Petropavlovsk's population is around 40,000. A great part of the increase in population can be traced back to the building up and the modernization of fishing and the catching of sea animals. Here there was formerly a shortage of workers, and this shortage forced them to bring thousands of seasonal workers every year to Kamchatka for the catching period. Among these seasonal workers there were many Koreans and Chinese. This shortage has been eliminated by immigration. Furthermore new industrial undertakings, especially complementary branches of the fish processing industry, have come

into being. However, a significant part of the immigration has been also for the benefit of agriculture, which, according to all reports, has made extraordinary progress. Thus, Kamchatka, which earlier had to have the bulk of its food supplied from outside, already gets along in large part with its own production, and the goal of autarchy in terms of food will probably soon be reached.

In the southern part of the peninsula, which has a mild climate, the breeding of cattle has attained a great and continually growing significance. The climatic conditions here are approximately the same as those of Sweden. The number of cattle had already reached several thousand head by 1939. A series of livestock sovkhoz have taken over the job of supplying milk and meat to the localities engaged in the fishing industry. In the Kamchatka valley and in the environs of Petropavlovsk agriculture, too, has made a start. The area under cultivation increases from year to year. In sovkhoz and kolkhoz grain, potatoes, and vegetables are cultivated with success. Fruit /301/ trees were introduced, and today are already yielding their own apples. A series of agricultural experimental stations in the interior and also in the coastal regions are to prepare the further development of agriculture and the breeding of livestock.

Of greatest importance for the economy of Kamchatka is fishing and the catching of sea animals. In this respect Kamchatka is the most important area in the Far East, and it is especially prominent because of the appearance of highly valuable types of salmon. The west coast has the principal role in the catching of salmon and crabs. On the east coast the area around the mouth of the Kamchatka is a pronounced salmon region, while Petropavlovsk constitutes the center of the catching of sea animals. From passive, rapacious catching of fish in immovable, built-in traps--the so-called "fish dams," which blocked the river--a transition has been made to catching the fish in sweep nets and drag nets. Thus the fish are now not caught at the mouths of the rivers alone but also in the sea. The earlier, primitive covering of the mounds of caught fish with salt, a practice which was customary on the entire coast of the Far East and under which great quantities of fish spoiled, has given way to smoking of the fish and salting of the fish in vats and above all to processing in canning factories. Modern fishing steamers with processing equipment on board have contributed to making Kamchatka today the second fish-catching region in the Soviet Union, second only to the Caspian Sea. In the catching of crabs Kamchatka even is in first place in the

world. The crabs are extraordinarily large and attain lengths of half a meter and more. They are drawn up from the bottom of the sea in drag nets in which they get entangled. Worthy of mention in this connection are the floating crab canning factories, which are used on the west coast and which carry out on board all the work from catching to canning.

The capital of the peninsula is Petropavlovsk. The city lies on Avacha Bay, which freezes over only exceptionally. The bay is surrounded in a semi-circle by the panorama of high volcanos. The city's favorable natural harbor, which a short while ago got a ship-yard with a dock for ships of up to 5,000 gross registered tons, gains more and more in importance since the ships of the Northern Sea Route spend the winter here before they start out on their trip to the north. This applies especially to ships which regularly travel to the Kolyma River in order to ensure supplies of heavy materials to the gold regions on the upper course of the Kolyma. Petropavlovsk is the center of the hunting of sea animals and of the industries connected with this. In addition, the city also has fish processing installations, a brickyard, saw mills, and a can factory, which is of especial importance since it supplies the necessary material to all the smaller fish processing localities. In the treeless delta of the Kamchatka River lies Ust'-Kamchatsk, the next most important locality on the peninsula. More than 2,000 workers /302/ work in the canning factories there in the summer. The locality, in addition, has a special importance as the gateway to the interior of the peninsula, which can be reached easily only through the Kamchatka valley, while the other approaches have to overcome difficult passes. In increasing measure also wood is floated down the Kamchatka River to the coast, where it is processed in and sent on from Ust'-Kamchatka. In the broad longitudinal valley of the Kamchatka there are a series of villages, among which Verkhne Kamchatsk and Mil'kovo should be mentioned. In this area removed from the coast, horses are kept, since supplying fish food for dogs causes difficulties. At the inner entrance to the cross valley, at the foot of the largest volcano cone, lies the village of Klyuchi, from which the volcano receives its name. Here the traffic lines from the interior merge and make the locality into a central trading place, especially for fur goods. In addition to Russians and Koryak, some Chinese and Koreans have also settled here. Klyuchi has a scientific observatory for the study and special observation of the Klyuchevskaya Sopka. Below the village the Kamchatka widens into a sea decorated with islands.

with islands.

361 The main locality on the west coast is Bol'sheretsk. It is the
228 center of the crab and salmon fishing industry. All the catches of the numerous fish collection points flow in here for processing. The main fishing regions stretch from Cape Subchatyy to the southern tip of the peninsula, i.e., more in the southern half of the coast. Further to the north lies Palana, the cultural center of the Koryak.

371 In the future development of Kamchatka, exploitation of the natural resources will play an important role. The supplies of coal and oil have already been treated in detail in another place, and thus only a mention may be sufficient here. Also water power rich in energy is available here. Up until now only small water-power stations for supplying agriculture have existed, although there are also vast possibilities here. Thus Kamchatka shows a relatively favorable picture of its economic development to date with further good prospects for the future.

Commander Islands

133 Approximately 250 kilometers east of Kamchatka there arise alone from the sea the Commander Islands. They are separated from the peninsula by a sea channel which is 1,000 meters deep, while toward the Aleutians the floor of the sea sinks down deeper. The island group, which covers 2,150 square kilometers, consists of two large, inhabited islands, Bering Island and Copper Island, and of two small islands, on which only large numbers of sea parrots and aras make their home. The islands are of volcanic origin and consist principally of andesite tuff and basalt.

Bering Island forms in the north a flat, low-lying moss steppe, while a wild highland traverses the southern part. This highland pro-
132 jects up to 670 meters. The damp, cold, constantly foggy and rainy weather (coldest month -4°, July +11°, annual rainfall 500 millimeters) and heavy storms permit only a crippled growth of mountain ash and
137 willows to come up. The islands lie at the latitude of Moscow. All the more luxuriant is the growth of grass; the Hercules types, which grow to more than the height of a man, are especially striking.

133 Copper Island received its name from the copper enclosed in the volcanic stone. It is formed from a mountain ridge, which is divided into two parts by a land narrows and which descends steeply to the sea. The mountain ridge is broken up by several cross valleys.

The greatest part of the population was concentrated on the southern islands, where limited cultivation of rye, wheat, barley and types of vegetables is possible. The principal occupations of the inhabitants--if we can judge from conditions before 1945--were, however, fishing and the hunting of sea mammals. Every summer the population was enlarged by around 10,000 fishermen, who came from Japan and occupied the islands for the catching season. In terms of the value of its yield, fishing was in first place by far, but the catching of walruses also played no insignificant role. The whales, after their summer stay in the Bering Sea, moved along the Kurils in the fall to their winter places in the southern part of the Sea of Okhotsk. In addition, seals and sea lions were also hunted.

After the islands were taken over by the Soviet Union and the greater part of the Japanese had been evacuated, numerous central fishing stations were founded on the islands. Furthermore, a walrus-catching fleet was stationed there, and a walrus-processing works was erected on one island. It is also planned to take up the breeding of fur-bearing animals such as the Japanese had begun.

Because of their volcanic character, the Kurils have numerous hot springs, which for the most part contain minerals. In natural resources the Kurils are poor; only a few of the islands contain rather large sulfur deposits. Exploitation of these deposits for the Soviet economy is being considered.

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